A POSSIBLE INTERMEDIATE HOST FOR *CLOACOTAENIA MEGALOPS* (CESTODA: HYMENOLEPIDIDAE), A COMMON PARASITE OF WATERFOWL IN NEW ZEALAND

STEWART A. BISSET

Department of Zoology, University of Canterbury, Christchurch, New Zealand

ABSTRACT

Possible intermediate hosts of *Cloacotaenia megalops* in New Zealand were investigated. Results indicate that *Herpetocypris pascheri*, a freshwater benthic ostracod, is probably the usual intermediate host in Canterbury, and possibly throughout New Zealand.

INTRODUCTION

Between 1971 and 1973, a survey was made of helminth parasites of the paradise shelduck *Tadorna variegata* (Gmelin, 1789) in Canterbury. Most of the birds examined were collected in the valleys of the Hope, Kakapo, Doubtful and Boyle Rivers near the Lewis Pass, Canterbury. The most common cestode found was *Cloacotaenia megalops*, a cosmopolitan species which inhabits the cloaca of waterfowl. Of 281 paradise shelducks examined, 62% were parasitised by *Cloacotaenia* and burdens averaged 3.8 worms per infected bird (range 1-16). The worms were also common in several grey ducks (*Anas superciliosa superciliosa*) examined.

Cloacotaenia megalops has been encountered in many studies of waterfowl parasites, but its life cycle and larval stages have been described only from northern Poland (Jarecka 1958, 1960, 1961). *Cypris puberta* (Ostracoda) was the only intermediate host reported for *Cloacotaenia megalops* by Jarecka, but this species does not occur in New Zealand (Eager 1971). This paper outlines a brief investigation of the transmission of *Cloacotaenia megalops* in New Zealand.

MATERIALS AND METHODS

Because *Cloacotaenia megalops* was so common in the paradise shelducks it seemed likely that the normal intermediate host species was also relatively common in the shelducks' habitat. *Herpetocypris pascheri* Brehm 1929, a freshwater ostracod, was particularly common throughout slow-flowing and still waters in the study area, and *Cyclops* spp. were present in still waters. These species were therefore the most obvious ones to examine as intermediate hosts. Individuals of these species were collected from the study area and examined for natural infections, but none was found.

Eggs from the ripe proglottids of several *Cloacotaenia megalops* were added to cultures of laboratory-bred *Herpetocypris pascheri* and unidentified *Cyclops* spp. The cultures were maintained for 21 days at room temperature, when they were inspected for infection.

RESULTS

Of 10 *Herpetocypris pascheri* selected at random from a culture, eight were found to be infected with cysticercoids of *Cloacotaenia megalops* (mean of 2.3 per infected ostracod).

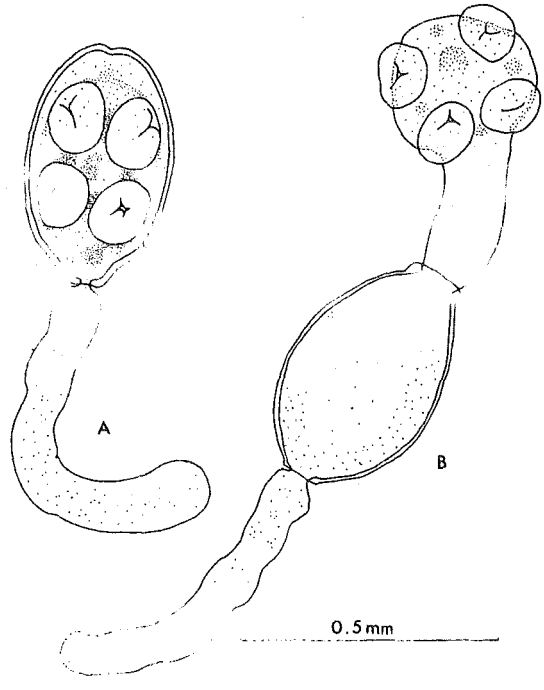

Fig. 1. *Cloacotaenia megalops*: A, cysticercoid; B, cysticercoid after evagination.

Several cysticercoids were stained in neutral red and examined microscopically (Fig. 1). None of the *Cyclops* was infected. Attempts to infect two incubator-hatched Khaki-Campbell ducklings by force-feeding each 20-25 infected ostracods were unsuccessful. Other *Herpetocypris pascheri* were infected in a subsequent duplicate experiment, and again a high infection rate occurred. However, an attempt to infect a third duckling was also unsuccessful.

DISCUSSION

The complete life history of *Cloacotaenia megalops* was not determined in the laboratory because attempts to infect ducklings experimentally were not successful. However, apparently only one intermediate host is involved in the transmission of *Cloacotaenia megalops* (Jarecka 1958, 1961) and so, as experimental infections of *Herpetocypris pascheri* were so successful, this ostracod is probably the natural transmitting agent of the cestode. It is possible that it fills this role not only in the study area but also throughout much of New Zealand, as *Herpetocypris pascheri* is one of the country's most widely distributed ostracods (Chapman 1963).

In natural conditions the percentage of *Herpetocypris pascheri* infected with *Cloacotaenia megalops* is probably relatively low. Evidence for this is based on the fact that despite examination of a number of *Herpetocypris pascheri* from the study area, no naturally infected specimens were found. Jarecka (1960) found only one naturally infected *Cypris puberta* in 280 specimens examined.

In all, 31 species of freshwater ostracods are known from New Zealand (Chapman 1963, Barclay 1968). Some of these may also be capable of transmitting *Cloacotaenia megalops*. However, Jarecka (1961) found that this species is very specific with regard to its intermediate host, as it would invade *Cypris puberta* but not two other species of ostracod: *Cypridopsis vidua* (present in New Zealand, Barclay 1968), and *Notodromas monashi*. He suggested that the morphology of the eggs of *Cloacotaenia megalops*, and the differences in niches occupied by the ostracods, may explain the specificity shown by the cestode. Eggs of *Cloacotaenia megalops* are thick-walled and heavy, and sink to the bottom where they are ingested readily by benthic ostracods. The results of my study support Jarecka's suggestion, as *Herpetocypris pascheri*, like *Cypris puberta*, is benthic and apparently feeds mainly amongst the deposit of detritus on the bottom of still or slow-flowing pools.

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